IN THE SPECIFICATION:

Please amend the specification as follows:

Please replace the paragraph starting at page 2, line 24 to read as follows:

--The increasing needs for inexpensive, small monitoring devices have added new impetus to miniaturize analysis systems. It is well known that miniaturization offers functional and economic benefits such as the reduction in sample size, decrease in reagent consumption and inexpensive mass production. Advancements in thin-film technologies have expanded the range of possible microsensor designs. On the other hand, micromachining processes, particularly anisotropic and plasma etching, and the sacrificial layer method make possible the construction of a variety of three-dimensional structures. It is feasible to employ these methods to produce sophisticated, low power integrated sensing systems at a modest cost. The high degree of reproducibility and the relatively small size of these devices enhance both performance and the potential for practical applications.--

Please replace the paragraph starting at page 3, line 20, to read as follow:

--Chemical species can be detected using electrochemical sensors. An example of a solid electrolyte electrochemical sensor is the ZrO_2- based high-temperature oxygen sensor. This sensor is operated at 650°C to ensure the ionic conductivity of ZrO_2.--

Please replace the paragraph on starting on page 5, line 8 as follows:

--The present invention provides a device for enhancing the sensitivity of a microsensor (or any other micro device) by providing on-line preconcentration. The invention provides a micromachined concentrator (hereinafter referred to as the microconcentrator) on a silicon substrate, that can be integrated with a sensor or a micromachined GC to enhance the signal to noise ratio. The present invention comprises a microconcentrator comprising a miniaturized sorbent trap fabricated on a microchip. In a preferred embodiment the microconcentrator is made on a silicon substrate so that a sensor or micromachined GC can be integrated on the same chip. In accordance with the invention, in practice the microconcentrator is put on-line with a

sample stream and may be operated at a fixed frequency. A preferred embodiment of the microconcentrator is composed of at least one microchannel etched in silicon. The channel is lined with a microheater for in-situ heating. In a most preferred embodiment preconcentration is done on a thin-film polymeric layer deposited above the heater in the channel. Rapid heating by the channel heater generates a "desorption pulse" to be injected into a detector, or, a sensor. The preconcentration effect provided by the microconcentrators of the present invention were found to enhance sensitivity, provide stable response, and exhibit good precision.--

Please replace the paragraph starting at page 6, line 1 to read as follows:

--In another embodiment the microconcentrator of the present invention is as a concentrator-injector for a gas chromatograph.--

Please replace the paragraph starting on page 9, line 3 to read as follows:

--The teachings of United States Provisional Application No. 60/433,475, filed December 13, 2002, entitled "Micromachined Heater for Microfluidic Devices," Docket No. 02-05 (PROV) and related United States Patent Application Serial No. 10/735,989, and "A microfabricated microconcentrator for sensors and gas chromatography, M. Kim and S. Mitra, Journal of Chromatography A, 996 (2003) 1-11 are incorporated herein in their entirety by reference.--

Please replace the paragraph starting on page 9, line 8 to read as follows:

--Now referring to FIGs. 1A-1G a preferred embodiment of a method for preparing a microconcentrator 2 according to the present invention discloses step-by-step processing of the wafer 10 and its cross-sectional view after each step. Wafer 10 may comprise a commercially available material commonly used for photolithographic fabrication such as but not limited to quartz, borosilicate glass or a suitable polymer known in the art. Quartz is a desirable material in electrophoresis because it is a good electrical insulator and is transparent to the UV required for absorbance and fluorescence detection. Quartz substrates also generate high electroosmotic flow rates and have favorable surface characteristics after fabrication by etching. Silicon is also desirable because it is possible to embed both fluid-control and fluid detection by integrated circuits on one substrate. By way of comparison the typical fluidic devices such as microreactors and microfluidic capillaries are 2-3 cm^2 in size, and are made of silicon, glass, quartz, or plastic

that are either etched, microimprinted or molded. The etched channels and chambers are usually covered with Pyrex, glass or silicon to contain the sample and the reagent. In a preferred embodiment wafer 10 comprises an oriented, p-typed (boron doped), single side polished silicon wafers with a thickness of 575 µm and a resistivity of 10-25 Ω-cm.--

Please replace the paragraph starting on page 11, line 1 to read as follows:

--Now referring to FIGs. 1D in a preferred embodiment a resistive layer 26 is deposited in channel 20 to provide a heating element. In FIG. 1D deposition of a resistive layer 26 such as but not limited to a conductor such as metal in the channel 20 by sputtering is performed. Resistive layer 26 may be any suitable conducting material such as but not limited to iron, copper, aluminum, chromium, gold, silver, platinum or the like, alloys thereof, composites of organic conducting polymers and metals and the like. Resistive layer 26 may be a suitable organic conducting polymer. In a most preferred embodiment the resistive layer 26 is an aluminum alloy comprising 99% aluminum, the rest being silicon and copper. Silicon-aluminum alloys prevent the silicon from reacting with the deposited aluminum, which could cause spiking or shorted circuits.--

Please replace the paragraph starting at page 17, line 14 as follows:

--The breakthrough characteristics could be studied from the peak shape. The sample flowed continuously through the microconcentrator 2. When the microconcentrator 2 was heated, a desorption peak was observed. The analytes were re-adsorbed in the microconcentrator 2 as it cooled. This lowered the base line into the negative territory appearing as a negative peak. As the sample began to breakthrough, the detector response increased back to the base line. The width of the negative peak has been shown to equal to the breakthrough time, t_b, measured by frontal chromatography. The desorption generated a positive concentration profile while the immediate sample ~~readsoprtion~~ readsorption generated a negative one. Thus, a microconcentrator peak contained a positive and a negative part as shown in FIG. 8. The time interval AD in FIG. 8 is the time taken by the sample to migrate through the microconcentrator 2. This is denoted as:--

Please replace the paragraph starting at page 19, line 14 to read as follows:

--Now referring to FIG. 10, a microconcentrator 2 in accordance with the present invention was also used as a GC injector. A mixture of benzene, toluene and xylene was used as the sample stream. A short megabore column was used for the separation of these compounds. A series of injections were made, and a chromatogram was obtained corresponding to each injection. Sharp peaks comparable to a conventional injection port were observed. This demonstrated that the injection band was narrow due to the rapid desorption from the microconcentrator 2. Reproducibility of retention time and peak height were very good. The relative standard deviation in peak height was consistently between 2 to 5%. The detection limit is dependent on the detector and could be lowered using a more sensitive laboratory instrument.--